

3.5 Polynomials of the Form $x^2 + bx + c$

Multiplying Binomials and Factoring Trinomials

$$2x(3x+5) = 6x^2 + 10x$$

Diagram illustrating the distributive property (FOIL) for the multiplication of a binomial and a monomial. The expression $2x(3x+5)$ is shown. A blue arrow labeled 'M' (Multiply) points from $2x$ to $3x$, and another blue arrow labeled 'F' (Factor) points from $2x$ to 5 . The result is $6x^2 + 10x$.

How to multiply 2 binomials:

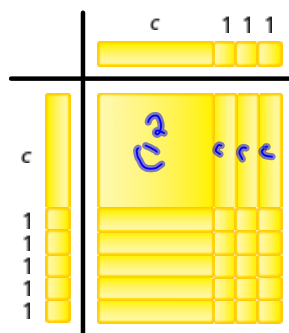
1. Use algebra tiles.

$$(c+5)(c+3)$$

To expand: $(c+5)(c+3)$

Make a rectangle with dimensions $c+5$ and $c+3$.

Place tiles to represent each dimension, then fill in the rectangle with tiles.



$$= c^2 + 8c + 15$$

The tiles that form the product are: $\text{? } c^2$ -tile, $\text{? } c$ -tiles, and $\text{? } 1$ -tiles.

So, $(c+5)(c+3) = \text{?}$

Sketch the multiplication of algebra tiles for each of the following:

$(c + 4)(c + 2)$ $c^2 + 6c + 8$

$(a + 2)(a + 3)$

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2. Use an Area Model to help you:

Expand $(h + 11)(h + 5)$

	h	11
h	$(h)(h) = h^2$	$(h)(11) = 11h$
5	$(5)(h) = 5h$	$(5)(11) = 55$

$$= h^2 + 16h + 55$$

So, $(h + 11)(h + 5) = ?$
 $= ?$

?

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$$(a + 20)(a + 3)$$

Area
Model

	a	20
a	a^2	$20a$
3	$3a$	60

$$= a^2 + 23a + 60$$

3. Use FOIL to multiply 2 binomials...

First
Outside
Inside
Last

$$(x + 4)(x - 5)$$

$$x^2 - 5x + 4x - 20$$

$$x^2 - x - 20$$

Example 1 Multiplying Two Binomials

Expand and simplify

Use FOIL

a) $(x - 4)(x + 2)$

$$x^2 + 2x - 4x - 8$$

$$x^2 - 2x - 8$$

b) $(8 - b)(3 - b)$

$$24 - 8b - 3b + b^2$$

$$24 - 11b + b^2$$

$$= b^2 - 11b + 24$$

CHECK YOUR UNDERSTANDING



SOLUTION

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Classwork/Homework

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